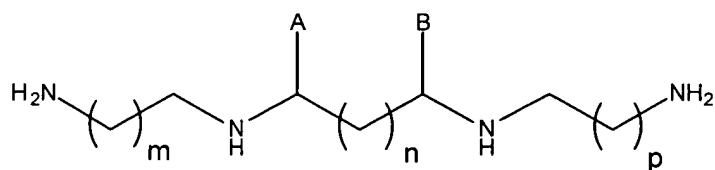


In The Claims

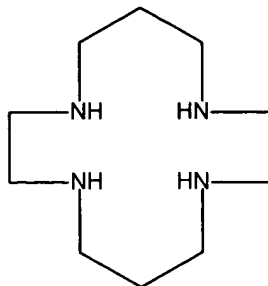
Amend Claims 2 and 65, and add Claim 106 as shown in the enclosed listing.

1. (cancelled)

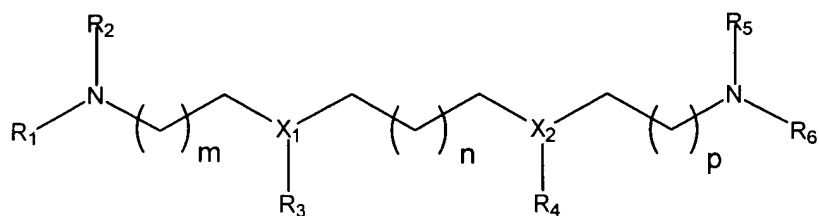
2. (currently amended): A method of treating degenerative diseases due to acquired mitochondrial DNA damage; redox damage to mitochondrial macromolecules and inherited mitochondrial genetic defects said method comprising the steps of: selecting a non-superoxide dismutase mimic composition from a group consisting of open ring polyamines, macrocyclic polyamines, branched linear polyamines and substituted polyamines; synthesizing said composition; and administering an effective dose of said composition to a mammal; wherein said step of synthesizing comprises converting by treatment with an alkyl halide a compound taken from a group consisting of those compounds having the formula



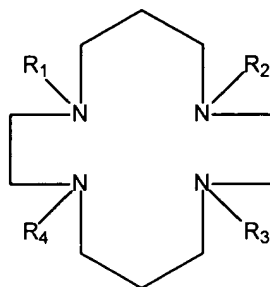
wherein A and B are hydrogen or alkyl, and m,n, and p are the same or different, and those compounds having the formula



3. (original): The method of claim 2 wherein said composition is taken from a group consisting of those compositions having the formulae:



and



wherein:

R_1 and R_2 are taken from a group consisting of hydrogen, alkyl, aryl, cycloalkyl, amino acid, glutathione, uric acid, ascorbic acid, taurine, estrogen, dehydroepiandrosterone, probucol, vitamin E, hydroxytoluene, carvidilol, α -lipoic acid, α -tocopherol, ubiquinone, phylloquinone, β -carotene, meanadione, glutamate, succinate, acetyl-L-carnitine, co-enzyme

Q, lazeroids, polyphenolic flavonoids, homocysteine, menaquinone, idebenone, dantrolene,
 $-(CH_2)_n[XCH_2]_nNH_2$ - wherein $n = 3-6$ and R_1 and R_2 taken together are $-(CH_2XCH_2)_n$ -
wherein $n = 3-6$,
 R_3 and R_4 are taken from a group consisting of hydrogen, alkyl, aryl, cycloalkyl, amino acid,
glutathione, uric acid, ascorbic acid, taurine, estrogen, dehydroepiandrosterone, probucol,
vitamin E, hydroxytoluene, carvidilol, α -lipoic acid, α -tocopherol, ubiquinone,
phyloquinone, β -carotene, meanadione, glutamate, succinate, acetyl-L-carnitine, co-enzyme
Q, lazeroids, polyphenolic flavonoids, homocysteine, menaquinone, idebenone, dantrolene or
heterocycle and R_3 and R_4 taken together are $-(CH_2XCH_2)_n$ - wherein $n = 3-6$,
 R_5 and R_6 are taken from a group consisting of hydrogen, alkyl, aryl, cycloalkyl, amino acid,
glutathione, uric acid, ascorbic acid, taurine, estrogen, dehydroepiandrosterone, probucol,
vitamin E, hydroxytoluene, carvidilol, α -lipoic acid, α -tocopherol, ubiquinone,
phyloquinone, β -carotene, meanadione, glutamate, succinate, acetyl-L-carnitine, co-enzyme
Q, lazeroids, polyphenolic flavonoids, homocysteine, menaquinone, idebenone, dantrolene
 $-(CH_2)_n[XCH_2]_nNH_2$ - wherein $n = 3-6$, and R_5 and R_6 taken together are $-(CH_2XCH_2)_n$ -
wherein $n = 3-6$.
M, n, and p may be the same or different and are bridging groups of variable length from 3-12
carbons, and
X is taken from a group consisting of nitrogen, sulfur, phosphorous and carbon.

4. (Withdrawn): The method of Claim one wherein said step of synthesizing further comprises
the steps of:
-admixing an element taken from a group consisting of 2,4 dibromopropane and absolute
ethanol into 1,2-diaminoethane hydrate;
-heating the resulting mixture to approximately 50°C for about one hour;

- 6 -adding potassium chloride;
- 7 -continuing said heating for three hours;
- 8 -filtering potassium bromide out of the mixture;
- 9 -distilling the mixture at reduced pressure;
- 10 -allowing the formation of top and bottom layers;
- 11 -separating and distilling the top layer;
- 12 -converting free amine in the distilled top layer to a tetrahydrochloride salt; and
- 13 -converting said salt to a free amine by treatment with ammonium hydroxide.

1 5. (Withdrawn): The method of claim 4 wherein said step of converting to a
2 tetrahydrochloride salt comprises adding hydrochloric acid to said distilled top layer.

1 6. (original): The method of Claim 4 wherein said composition consists of 1,3-bis-[(2'-
2 aminoethyl)-amino]propane and step of admixing a solution comprises preparing said solution
3 by mixing 1,3-dibromopropane and absolute ethanol in a ratio of approximately 1 to 3 per
4 weight.

1 7. (Withdrawn): The method of Claim 6 wherein said step of admixing further comprises
2 slowly adding said solution into 1,2-diaminoethane hydrate in a ratio of approximately 2.6 to 1
3 per weight.

1 8. (Withdrawn): The method of claim 7 wherein, the step of preparing said solution
2 comprises mixing 15 grams of 1,3-diaminopropane and 50 milliliters of absolute ethanol; and
3 the step of slowly adding comprises adding said solution to 20 grams of potassium chloride;

1 9. (Withdrawn): The method of Claim 8 wherein said step of converting to a
2 tetrahydrochloride salt comprises adding six molar concentration of hydrochloric acid.

10.-13. (canceled)

1 14. (Withdrawn): The method of Claim 13 wherein said degenerative diseases comprise
2 neurodegenerative diseases characterized by excess iron pools and said compound is selected
3 from a group consisting of 2,2,2-piperidine and 2,3,2 adamantane.

1 16. (Withdrawn): The method of Claim 13 wherein said degenerative diseases comprise
2 neurodegenerative diseases and strokes; and said composition is selected from a group
3 consisting of compositions having open ring metal binding molecules taken from a group
4 consisting of compositions having copper binding molecules and manganese binding
5 molecules.

1 17. (Withdrawn): The method of Claim 16 wherein said compositions having copper-binding
2 molecules include 2,3,2 isopropyl on N1/N4; and
3 said compositions having manganese-binding molecules include 3,3,3 tetramine.

18.-24. (canceled)

1 25. (Withdrawn): The method of Claim 22 wherein said degenerative disease comprises
2 Alzheimer's disease and presbycusis; and
3 said composition is derived from compounds selected from a group consisting of α lipoic acid
4 and acetyl-l-carnitine polyamines.

26-28. (canceled).

1 29. (Withdrawn): The method of Claim 22 wherein said degenerative diseases
2 comprise cancer; and said composition is taken from a group consisting of cobalt di-
3 homocysteine polyamines.

30.-37. (cancelled)

1 38. (Withdrawn): The method of Claim 20 wherein;
2 said compound consisting of pyridine tetramine.

39.-43. (canceled)

1 44. (Withdrawn): The method of Claim 4 wherein said composition consists of (2-
2 aminoethyl){3-[(2-aminoethyl)amino]-1-methylbutyl}amine; and said step of admixing a
3 solution comprises preparing said solution by mixing 2,4 dibromopropane and absolute
4 ethanol in a ratio of approximately 1 to 20 per weight.

1 45. (Withdrawn): The method of claim 44 wherein said step of admixing comprises slowly
2 adding said solution into 1,2-diaminoethane hydrate in a ratio of approximately 44 to 1 per
3 weight.

1 46. (Withdrawn): The method of claim 45 wherein said step of converting to a
2 tetrahydrochloride salt comprises of adding hydrochloric acid.

1 47. (Withdrawn): The method of Claim 2 wherein said composition consists of (2-
2 aminoethyl){3-[(2-aminoethyl)amino]-1-methylbutyl}amine; and
3 said step of synthesizing further comprises; the steps of
4 -admixing a solution of an element, taken from a group consisting of 1,3-diaminopropane and
5 N,N-dimethyl-1,3-propanediamine and ethanol into 2-chloromethylpiperidine in water;
6 -adjusting the pH of the resulting mixture to 9 by addition of 10% sodium hydroxide;
7 -stirring the mixture at room temperature and maintaining the pH between 8 and 9 by addition
8 of sodium hydroxide over 3 days;
9 -allowing solvents to evaporate; and
10 -extracting residues with CH₂Cl₂.

1 48. (Withdrawn): The method of Claim 47 wherein said step of admixing a solution further
2 comprises adding said solution into chloromethyl pyridine in water in a ratio of approximately
3 5 to 3 per weight wherein said chloromethylpyridine is diluted into water in a ratio of
4 approximately 1 to 5 per weight.

1 49. (Withdrawn): The method of claim 48 wherein said step of admixing a solution
2 comprises preparing said solution in a ratio of approximately 1 to 50 per weight.

1 50. (Withdrawn): The method of Claim 49 wherein said steps of synthesizing comprises
2 synthesizing
3 (2-pyridylmethyl){3-[(2-pyridylmethyl)amino]propyl}amine; and
4 said step of admixing a solution further comprises preparing said solution by mixing 1,3-
5 diaminopropane in water with ethanol.

1 51. (Withdrawn): The method of claim 50 when said step of synthesizing further comprises
2 synthesizing methyl(3-[methyl(2-pyridylmethyl)amino]propyl}(2-pyridylmethyl)amine; and
3 said step of admixing a solution further comprises preparing said solution by mixing N,N-
4 dimethyl-1,3 propanediamine in water with ethanol.

1 52. (Withdrawn): The method of claim 2 wherein said step of synthesizing comprises the
2 steps of a preparation by adding a first solution of 1,3 diaminopropane and absolute ethanol
3 dropwise into a second solution of ethanol and an element taken from a group consisting of 1-
4 (2chloroethyl)piperidine and 1-(2-chloroethylpiperizine) and admixing over approximately 30
5 minutes;
6 stirring said preparation over approximately 24 hours;
7 evaporating the solvents in said preparation;
8 extracting the residue using a volume of CH_2Cl_2 dried over Na_2SO_4 and evaporated to dryness;
9 purifying the resulting composition by converting to its hydrochloride salt by adding
10 hydrochloric acid; and
11 converting said salt to its free amine by treatment with NH_4OH .

1 53. (Withdrawn): The method of claim 52 wherein said step of mixing a preparation
2 comprises
3 forming said first solution of 1,3 diaminopropane and ethanol in a ratio of approximately 1 to
4 100 per weight and adding said first solution into said second solution in a ratio of
5 approximately 1 to 1 by weight.

1 54. (Withdrawn): The method of Claim 2 wherein said composition consists of
2 [2-(methylethylamino)ethyl](3-{[2-(methylamino)ethyl]amino}propyl)amine; and said step of
3 synthesizing further comprises; preparing of first mixture of magnesium turnings,
4 1,3-bis-[(2'-aminoethyl)-amino]propane, benzene and acetyl chloride respective approximate
4 percentage of 0.6%, 8.5%, 8.45%, and 6.4% per weight;
5 cooling said first mixture;
6 separating the mixture into a liquid phase and a solid phase;
7 preparing a second mixture by mixing said solid phase with ether;
8 preparing a solution by pouring said second mixture over ice;
9 preparing a third mixture by adding said solution to said liquid phase;
10 washing said third mixture with sodium bicarbonate;
11 washing said third mixture with water.

1 55. (Withdrawn): The method of Claim 2 wherein said step of synthesizing comprises
2 converting the starting di – or tetramine component, at least one of said components in said
3 compounds to the corresponding N-substituted compound by treatment with an alkyl halide;
4 and
5 purifying said composition by conversion to a salt through addition of hydrochloric acid.

1 56. (Withdrawn): The method of Claim 2 wherein said composition consists of (2-
2 aminoethyl){3-[(2-aminoethyl)methylamino]propyl}methylamine, and
3 said step of synthesizing further comprises:
4 preparing a first solution of N,N-dimethyl-1,3-propanediamine and ethanol in a ratio of
5 approximately 1 to 50 per weight;
6 preparing a second solution of 2-chloroethylamine and ethanol in a ratio of approximately 1 to
7 17 per weight;

combining said first and second solutions into a third solution;
stirring said third solution at room temperature for approximately 20 hours;
evaporating solvents in said third solution; and
extracting residues in said solution with a volume of CH_2Cl_2 .

57. (Withdrawn): The method of Claim 2 wherein said composition consists of
[2-(bicyclo[3.3.1]non-3-ylamino)ethyl](3-{2-(bicyclo[3.3.1]non-3-ylamino)ethyl}amino)propylamine, and said step of synthesizing further comprises heating
for approximately 6 hours at 215°C a mixture of 1-bromoadamantane and 2,3,2-tetramine in a
mol ratio of approximately 1 to 5;
admixing said mixture into a solution of 2NHCl and ether having a ratio of approximately 1.25
to 1 per weight, in a ratio of approximately 1 to 9 per weight;
separating the aqueous layer and alkalinizing said layer in a volume of 50% aqueous NaOH ;
extracting with ether;
drying the extract over K_2CO_3 ; and
evaporating to an oil.

58. (Withdrawn): The method of Claim 2 wherein said composition consists of [2-(methylethylamino)ethyl](3 {[2-(methylamino)ethyl]amino}propyl)amine; and
said methylating step of synthesizing further comprises;
methylating terminal nitrogens of 2,3,2 tetramine by refluxing in the presence of benzene and
acetyl chloride.

59. (Withdrawn): The method of Claim 58 wherein said step of synthesizing further
comprises;
preparing a first mixture of magnesium turnings;

4 of 1,3-bis-[(2'-aminoethyl)-amino]propane, benzene and acetyl chloride respective
5 approximate percentage of 0.6%, 8.5%, 8.45%, and 6.4% per weight;
6 cooling said first mixture;
7 separating the mixture into a liquid phase and a solid phase;
8 preparing a second mixture by mixing said solid phase with ether;
9 preparing a solution by pouring said second mixture over ice;
10 preparing a third mixture by adding said solution to said liquid phase;
11 washing said third mixture with sodium bicarbonate;
12 washing said third mixture with water;
13 drying said third mixture over CaCl_2 ;
14 filtering said third mixture;
15 preparing a fourth mixture of said third mixture sodium hydride and N,N,-dimethylformamide
16 in a ratio of approximately 2.5, 1 and 37.5 respectively per weight;
17 heating said fourth mixture under N_2 at approximately 60°C for about three hours;
18 treating said fourth mixture with approximately $\frac{1}{4}$ its volume of iodomethane;
19 stirring said treated fourth mixture at 50°C for approximately 24 hours;
20 quenching said treated fourth mixture with 95% ethanol;
21 removing volatiles at reduced pressure;
22 watering with addition of approximately $\frac{1}{2}$ volume of water;
23 extracting organic products with approximately three $\frac{1}{2}$ volumes of chloroform;
24 washing said organic products with water and NaCl ;
25 drying said organic products over anhydrous sodium sulfate;
26 concentrating into an oil;
27 purifying said oil by flash chromatography with $\frac{1}{4}$ hexanes-ethyl acetate as eluent into an
28 acetylated oil of said composition;

forming a solution of said acetylated oil, potassium hydroxide, methanol and water in respective proportions of 1, 3, 23 and 5 per weight respectively; heating said solution under reflux for about 24 hours; removing methanol at reduced pressure; extracting into ether; washing with NaCl; drying over sodium sulfate; concentrating under vacuum; purifying by flash chromatography; and evaporating solvents.

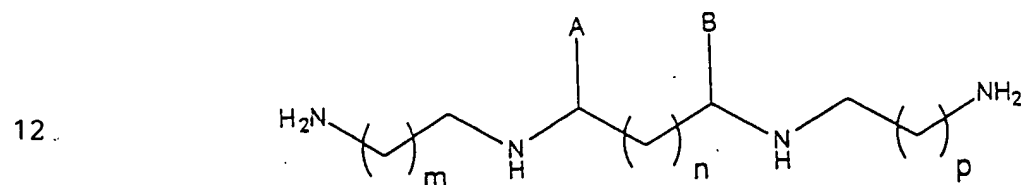
60. (Withdrawn): The method of Claim 2 wherein said composition consists of [2-(dimethylamino)ethyl](3-{[2-(dimethylamino)ethyl]methylamino}propyl)methylamine; and said steps of synthesizing further comprises; refluxing for about 20 hours a solution of 2,3,2 tetramine, formic acid and 37% formaldehyde and water in a weight proportions of approximately 1,10,10 and 1 respectively; evaporating solvents from said solution; making said solution basic by addition of NaOH; and extracting residues with 3 times 1 1/2 volume of CH₂Cl₂.

61. (Withdrawn): The method of Claim 2 wherein said composition consists of 2-[3-(2-aminoethylthio)propylthio]ethylamine; and said step of synthesizing further comprises: preparing a first solution of 1,3-dimercaptopropane and water in a weight ration of about 1 to 50; preparing a second solution of NaOH and water in a weight ratio of about 1.5 to 10;

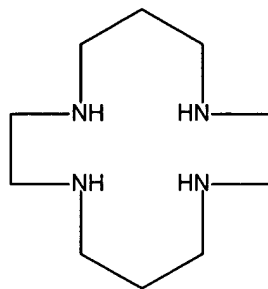
7 forming a first mixture by mixing said first and second solutions in a weight ratio of about 5 to
8 1;
9 forming a third solution of 2-chloroethylamine and ethanol in a weight ratio of about 8.5 to 1;
10 admixing said solution into said mixture in a ratio of about 1 to 3.8;
11 refluxing said mixture over approximately 8 hours;
12 evaporating solvents from said refluxed mixture;
13 extracting residues with CH_2Cl_2 .

62-64. (cancelled)

1 65. (currently amended) A method of treating degenerative diseases due to
2 acquired mitochondrial DNA damage;
3 redox damage to mitochondrial macromolecules
4 and inherited mitochondrial genetic defects
5 said method comprising the steps of: selecting a non-superoxide dismutase mimics
6 composition from a group consisting of open ring polyamines, macrocyclic polyamines,
7 branched linear polyamines and substituted polyamines;
8 synthesizing said composition; and
9 administering an effective dose of said composition to a mammal;
10 wherein said step of synthesizing comprises converting by treatment with an alkyl halide a
11 compound taken from a group consisting of those compounds having the formula:



wherein A and B are hydrogen or alkyl, and m,n, and p are the same or different, and those compounds having the formula:



[The method of Claim 2] wherein said composition consists of 1,4,8,11-tetraaza-1,4,8,11-tetraethylcyclotetradecane; and
said step of synthesizing further comprises:
forming a solution of cyclam and DMF in a weight ratio of approximately 1- to 50;
admixing under stirring small portions of NaH in a weight ratio of about 1 to 12.5;
Heating said solution for about three hours at about to degrees C;
admixing iodoethane in a single portion into said solution in a weight ratio of about 1 to 17.5;
Heating said solution at about 60 degrees C over about 18 hours;
quenching the solution with about 95% ethanol;
extracting residue with CH_2CH_2 .

66. (Withdrawn): The method of Claim 2 wherein said composition consists of N,N'-(2'-dimethylphosphinoethyl)-propylenediamine; and the step of synthesizing further comprises:
incorporating phosphorus into a molecule of propylenediamine in place of two of its nitrogen atoms by addition and reduction reactions.

67. (Withdrawn): The method of Claim 66 wherein said step of incorporating comprises:
preparing a first solution by dissolving propylenediamine into ethanol in a weight ratio of about 1 to 50;

4 admixing dimethylvinylphosphine sulfide into said solution in a weight ratio of about 1 to 22;
5 heating at reflux said solution for about 72 hours;
6 evaporating solvents under reduced pressure, leaving a residue.

1 68. (Withdrawn): The method of Claim 67 wherein said step of incorporating further
2 comprises:

3 dissolving said residue in chloroform;
4 washing said residue with NaOH; and
5 drying said residue over MgSO_4 .

1 69. (original): The method of Claim 68 wherein said step of synthesizing further comprises:

2 removing solvents in said residue under reduced pressure to yield an oil,
3 crystallizing said oil with ethyl acetate;
4 preparing a suspension of LiAlH_4 in dry dioxane in a weight ratio of about 1 to 100;
5 admixing said oil into said suspension;
6 to yield a mixture;
7 refluxing said mixture for about 36 hours;
8 cooling said mixture; and
9 adding a solution of dioxane in water and NaOH into said mixture.

1 70. (Withdrawn): The method of Claim 2 wherein said diseases consist of diabetes and
2 abnormal low density lipoprotein (LDL) to high density lipoprotein (HDL) ratio and said
3 composition is selected from a group consisting of vanadyl 2,3,2-tetramine and chromium
4 2,3,2-tetramine; and
5 said step of synthesizing further comprises reacting a metallic salt with 2,3,2-tetramine in an
6 ethanol solution.

1 71. (Withdrawn): The method of Claim 70 wherein said step of reacting comprises:
2 forming a first solution of 2,3,2 tetramine in ethanol in a weight ratio of about 1 to 20;
3 forming a second solution of vanadyl acetylacetonate in ethanol in a weight ratio of about 1 to
4 275;
5 admixing said second solution into said first solution in a volume ratio of about 1 to 1; and
6 refluxing said solution for almost 30 minutes.

1 72. (Withdrawn): The method of Claim 70 wherein said step of reacting further comprises:
2 preparing a first solution of 2,3,2-tetramine in ethanol in a weight ratio of about 1 to 20;
3 preparing a second solution of chromium (III) nitrate in ethanol in a weight ratio of about 1 to
4 80;
5 admixing said second solution into said first solution in a volume ratio of about 1 to 1; and
6 refluxing said solution for about 30 minutes.

1 73. (Withdrawn): The method of Claim 55 wherein said step of converting comprises using
2 amines to attach alkyl halide in a nucleophilic substitution of N atoms.

1 74. (previously presented): The method of Claim 3 wherein
2 said step of selecting comprises selecting a macrocyclic polyamine; and
3 said diseases comprise diabetes and diabetes-induced syndromes including congestive heart
4 failure, myocardial infarction, stroke, glaucoma, atherosclerosis, cardiomyopathy, ischemia,
5 optic neuropathy and peripheral neuropathy.

1 75. (previously presented): The method of claim 74 wherein said step of selecting comprises:

ascertaining the heats of formation of a set of said compounds; and choosing said compound in consideration of its heat of formation compared to the heats of formation of other compounds in said set.

76. (previously presented): The method of claim 75 wherein: said step of ascertaining comprises: calculating the heats at the formation of said set of compounds from their respective constituent atoms.

77. (previously presented): The method of claim 76 wherein said step of choosing comprises determining the stabilities of said set of compounds as a function of their respective heats of formation;
wherein said stabilities are determined in inverse proportion to said respective heats of formation; and
whereby the relative stabilities of the set of compounds are deemed indicative of ability to yield the most stable complex when reacted with a group of metals.

78. (previously presented): The method of Claim 77 wherein;
said group of metals includes copper, cobalt, iron, zinc, cadmium, manganese and chromium.

79. (Withdrawn): The method of Claim 78 wherein said degenerative diseases comprise ischemic damage and pump failure post myocardial infarction characterized by iron-induced toxic redox effects and depletion of tissue zinc stores; and said compound is selected from a group consisting of zinc cyclam methylated, zinc cyclam adamantane, cyclam methylated and cyclam adamantane.

1 80. (Withdrawn): : The method of claim 78 wherein said degenerative diseases comprise
2 neurodegenerative disorders, stroke, glaucoma, atherosclerosis, cardiomyopathy, ischemia,
3 optic neuropathy, peripheral neuropathy, presbycusis and cancer; and said composition is
4 selected from derivatives of those compounds having the largest ring molecules.

1 81. (Withdrawn): The method of claim 80 wherein said compounds having the largest ring
2 molecules includes 3,3,3 tetramine, cyclam adamantanes, cyclam 3,3,3 and compounds having
3 alkyl substituted molecules.

1 82. (Withdrawn): The method of Claim 78 wherein said degenerative diseases comprise
2 Parkinson's, Lou Gehrig's, Binswanger's, and Lewy Body diseases, Olivopontine Cerebellar
3 Degeneration, stroke, glaucoma and optic neuropathy; and
4 said composition is selected from a group of compositions having alkyl side chains.

1 84. (Withdrawn): The method of claim 3 wherein said degenerative diseases comprise
2 stroke, diabetic neuropathy, peripheral neuropathy, Alzheimer's disease, atherosclerosis,
3 ischemia, diabetes, presbycusis, cardiomyopathy and congestive heart failure; and said
4 composition is derived from compounds having terminal nitrogen added molecule substitution
5 with elements selected from a group consisting of glutathione, uric acid, ascorbic acid, taurine,
6 estrogen, dehydroepiandrosterone, probucol, vitamin E, hydroxytoluene, carvedilol, α lipoic
7 acid, tocopherols, ubiquinone, phylloquinone, carotenes, menadione, glutamate, succinate,
8 acetyl-L-carnitine, co-enzyme Q, lazeroids, polyphenolic flavonoids, homocysteine,
9 menaquinone, idebenone, dantrolene and phosphorous.

1 85. (Withdrawn): The method of Claim 84 wherein said degenerative disease comprises
2 stroke; and said composition consists of uric acid polyamine.

1 86. (Withdrawn): The method of Claim 84 wherein said degenerative disease comprises
2 diabetes; and said composition is derived from compounds selected from a group consisting of
3 phosphorous, taurine, CoEnzyme Q, α lipoic acid, tocopherol, succinate, glutamate and acetyl-
4 l-carnitine polyamines.

1 87. (Withdrawn): The method of Claim 84 wherein said degenerative disease comprises
2 atherosclerosis; and said composition selected from a group consisting of tocopherol
3 polyamine and coenzyme Q polyamine.

1 88. (Withdrawn): The method of Claim 84 wherein said degenerative disease
2 comprises ischemia; and
3 said composition is selected from a group consisting of tocopherol polyamine and coenzyme Q
4 polyamine.

1 89. (Withdrawn): The method of Claim 84 wherein said diseases comprise myocardial
2 degeneration and congestive heart failure; and said composition consists of coenzyme Q
3 polyamine.

1 90. (previously presented): The method of Claim 3 wherein said step of converting comprises
2 adjusting the in vivo half life and pharmacokinetic properties of said composition by selective
3 terminal nitrogen substitutions.

1 91. (previously presented): The method of Claim 3 wherein said step of converting comprises
2 adjusting the in vivo half life and pharmacokinetic properties of said composition by addition
3 of side chains on amino or methylene groups.

1 92. (previously presented): The method of Claim 3 wherein said step of selecting comprises:
2 finding the octanol / water coefficients of partition of a series of said compounds; and
3 picking said compound in consideration of its octanol / water coefficient compared to the
4 octanol water coefficients of other compounds in said series.

1 93. (previously presented): The method of Claim 92 wherein said step of picking comprises
2 determining the abilities of said series of compounds to pass through the intestinal, blood brain
3 and blood retinal barriers as a function of their respective octanol / water coefficients; wherein
4 said abilities are determined according to a distribution curve centered about 2 and having a
5 useful range extending towards 0.5 and 4, the numbers being log values.

1 94. (previously presented): The method of Claim 3 wherein said step of selecting comprises;
2 measuring pKas of a list of said compounds; and
3 selecting said compound in consideration of its pKas compared to the pKa's of other
4 compounds on the list.

1 95. (previously presented): The method of Claim 94 wherein said step of selecting comprises;
2 selecting a composition with higher pKas in the treatment a disease characterized by lower
3 tissue pH.

1 96. (previously presented): The method of Claim 95 wherein said diseases include ischemia
2 post myocardial infarction and diabetic ketoacidosis.

1 97. (previously presented): The method of Claim 3 wherein said step of selecting comprises
2 determining the respective likely efficiency of said compounds in consideration of the disease
3 target to be treated and the route of administration.

1 98. (Withdrawn): The method of Claim 82 wherein said degenerative disease consists of
2 Alzheimer's disease and diabetes; and
3 said compound comprises acetyl-l-carnitine polyamine.

1 99. (Withdrawn): The method of Claim 84 wherein said degenerative disease consists of
2 diabetes; and
3 said compounds are selected from a group consisting of 2,3,2 piperidine, glutamate polyamine,
4 succinate polyamine, chromium tetramine and vanadyl tetramine and phosphorous polyamine.

1 100. (Withdrawn): The method of Claim 3 wherein said degenerative diseases comprise
2 peripheral neuropathy and optic neuropathy; and
3 said compounds comprise taurine polyamine and α lipoic acid polyamines.

1 101. (Withdrawn): The method of Claim 3 wherein said degenerative diseases comprise
2 glaucoma; and said compounds comprise adamantane 2,3,2 tetramine and adamantane cyclam.

1 102. (Withdrawn): The method of Claim 3 wherein said degenerative disease comprise
2 presbycusis; and said compounds comprise α lipoic acid polyamine and acetyl-l-carnitine
3 polyamine.

1 103. (Withdrawn): The method of Claim 3 wherein said composition consists of:

1,4,8,11-tetraaza-1,4,8,11-tetramethylcyclotetradecane; and

said steps of synthesizing comprises:

refluxing for about 18 hours a solution of cyclam, formic acid, 37% formaldehyde and water in weight proportions of approximately 1, 5.3, 4.5 and 1 respectively;

adding water to said solution in a weight ratio of approximately 0.5 to 1;

cooling said solution to about 5°C;

adjust the pH of said solution to above 12 with NaOH;

extracting the solution with CH₂Cl₂.

104. (Withdrawn): The method of Claim 2 wherein said composition consists of 1,4,8,11-tetraaza-1,4,8,11-tetra(2-piperidylethyl)cyclotetradecane; and said step of synthesizing further comprises:

preparing a first solution of cyclam and CH₂Cl₂ in a weight ratio of approximately 1 to 50;

preparing a second solution of NaOH and water in a weight ratio of approximately 1 to 31;

preparing a mixture of said first and second solution in a weight ratio of approximately 1 to 1;

preparing a third solution of 1-(2-chloroethyl)piperidine and CH₂Cl₂ in a weight ratio of approximately 1 to 14;

adding said third solution dropwise into said mixture in a weight ratio of about 1 to 2;

stirring said mixture over about 24 hours;

evaporating solvents; and

extracting residues with CH₂Cl₂.

105. (Withdrawn): The method of Claim 2 wherein said composition consists of 1,4,8,11-tetraaza-1,4,8,11-tetrabicyclo[3.3.1]non-3-ylcyclotetradecane; and

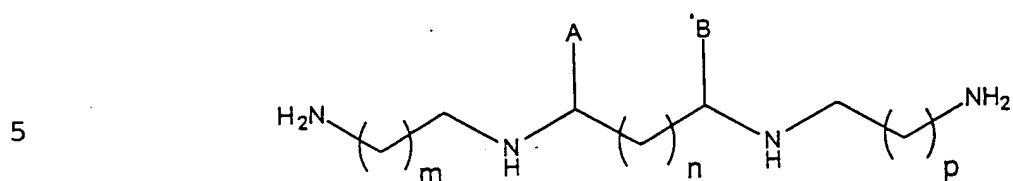
said step of synthesizing further comprises:

forming a first solution of cyclam and ethanol in a weight ratio of approximately 1 to 100;

- 5 forming a second solution of 1-bromoadamantane and ethanol in a weight ratio of 1 to 23;
6 forming a mixture by adding said second solution dropwise into said first solution in a weight
7 ratio of about 1 to 1, over 30 minutes;
8 heating said mixture to reflux over about 20 hours;
9 evaporating said solution under reduced pressure; and
10 extracting residue from said solution with CH_2Cl_2 .

1 106. (New): A method of treating degenerative diseases, said method comprising:
2 administering to a mammal an effective dose of non-superoxide dismutase mimic compound
3 taken from a group consisting of those compounds having the formula

1 107. (Withdrawn): The method of Claim 78 wherein said degenerative diseases comprise
2 neurodegenerative diseases, ischemia post myocardial infarction and atherosclerosis; and
3 said composition is selected from derivatives of compounds from a group consisting of
4 piperidine, piperazine and adamantane.



6 wherein A and B are hydrogen or alkyl, and m,n, and p are the same or different, and those
7 compounds having the formula

